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COASTAL DEVELOPMENT PERMIT APPLICATION

Application number……..**3-05-065, Santa Cruz Small Craft Harbor Five-Year Dredging Permit**

Applicant……...Santa Cruz Port District (Contact: Brian Foss, Port Director)

Project Location……...Santa Cruz Small Craft Harbor and Harbor Beach/Twin Lakes State Beach, City of Santa Cruz (Santa Cruz County)

Project Description…….. Renewal of five-year dredging permit to annually allow: 1) disposal of up to 350,000 cubic yards of entrance channel sediment (>80% sand) into the nearshore environment or into the surf line at Harbor Beach/Twin Lakes State Beach; 2) dredging of 10,000 cubic yards of inner harbor sediment (7,000 cubic yards >80% sand & 3,000 cubic yards between 50% and 79% sand) with disposal into the nearshore environment; 3) dredging of 10,000 cubic yards of inner harbor sediment (which may consist of <50% sand) with disposal at an upland site or at a federally approved offshore disposal site.

File Documents…….CDP 3-00-034; CDP 3-00-034-A1; CDP 3-00-034-A2.

Staff Recommendation…… **Approval, with conditions**

EXECUTIVE SUMMARY

In October 2000, the Coastal Commission conditionally approved a five-year permit (CDP 3-00-034) that authorized the dredging of 350,000 cubic yards (CY) of sediment per year from the entrance channel and 10,000 CY of sediment per year from the inner harbor of the Santa Cruz Small Craft Harbor, with disposal into the surf line or the nearshore environment approximately 70 yards offshore. CDP 3-00-034 was conditioned to require that all dredge materials disposed of into the surf line or the nearshore environment consist of over 80% sand, consistent with a U.S Environmental Protection Agency "rule of thumb" guideline.

In 2001 and 2003, the Commission approved amendments to CDP 3-00-034 (CDP 3-00-034-A1, CDP 3-00-034-A2), which allowed the Port District to conduct "demonstration" projects to allow for the disposal of a maximum of 3,000 CY/year of clean, fine-grain inner harbor sediment (consisting of 48% sand and 52% silt/clay in 2001 and between 50% and 80% sand content in 2003) into the

nearshore area east of the harbor via the offshore pipeline. The purpose of these demonstration projects was to evaluate the environmental effects of placing clean, fine-grain dredge material into the nearshore littoral zone. The demonstration projects were undertaken in March 2001 (CDP 3-00-034-A1) and February and April 2005 (CDP 3-00-034-A2). Extensive monitoring programs were conducted before, during, and after each of the demonstration projects to ascertain if any fine-grain dredge sediment could be detected on the beaches or the nearshore benthic environment. The results of the data collected during the monitoring programs concluded that the demonstration projects did not significantly change, alter, or impact the beaches or nearshore marine benthic habitats in the study areas. CDP 3-00-034-A2 amended the base dredging permit (CDP 3-00-034) to allow up to 10,000 CY of sediment from the inner harbor, of which up to 3,000 CY could consist of between 50% and 79% sand (the remaining 7,000 CY from the inner harbor had to consist of at least 80% sand) for the remaining two years of the base permit. The base permit (CDP 3-00-034) expires in October 2005.

The Port District has requested approval of a five-year permit to: 1) annually dispose of up to 350,000 cubic yards of entrance channel sediment, consisting of greater than 80% sand, through the offshore pipeline into the nearshore environment or through the surf line pipeline onto Harbor Beach/Twin Lakes State Beach; 2) to annually dredge up to 10,000 cubic yards of clean sediment from the inner harbor with disposal through the offshore pipeline into the nearshore environment. Of this 10,000 cubic yards, up to 7,000 CY would consist of at least 80% sand and a maximum of 3,000 CY would consist of between 50% and 79% sand; 3) annually dredge a maximum of 10,000 cubic yards of inner harbor sediment, which could consist of sediment averaging less than 50% sand, with disposal at an upland site or at SF-14, which is a federally approved offshore disposal site located approximately one mile offshore of Moss Landing at the head of the Monterey Bay Canyon.

The issues raised by this project are as follows:

Beach Replenishment: Coastal Act Section 30233(b) requires that dredge material suitable for beach replenishment be transported for such purposes to appropriate beaches. The vast majority of the sediments proposed for dredging and disposal average greater than 80% sand, consistent with the Army Corps of Engineers (ACOE) and U.S. Environmental Protection Agency (EPA) guidelines regarding dredging and beach replenishment. The project also includes the dredging of up to 3,000 CY of clean, fine-grain (50% to 80% sand) inner harbor material with disposal into the nearshore environment. According to recent studies, the fine-grain material will be transported to the midshelf mudbelt, while the sandy material will become available for beach replenishment. The proposed project is consistent with the dredging and beach replenishment priorities of Coastal Act Section 30233 because it ensures that dredge material suitable for beach replenishment will be placed into the nearshore environment where it will be available for transport to local beaches, or directly into the surf line where it will provide direct sand replenishment to Harbor Beach and Twin Lakes State Beach.

Air Quality: Hydrogen sulfide is a colorless, flammable gas, heavier than air, which at low concentrations smells like rotten eggs. Hydrogen sulfide is produced in nature primarily through the decomposition of dead plant and animal matter by anaerobic sulfur bacteria. In entrance channel

sediments, hydrogen sulfide is produced by decaying seaweed. The hydrogen sulfide from the decaying seaweed is released into the air when the sandy entrance channel material is placed into the surf line for beach replenishment. The odor of hydrogen sulfide has been a major challenge for the Harbor as some surfers and harbor neighbors complain that the odor is overwhelming and in some cases makes people feel sick.

Commencing with the 1997 dredge season, the offshore disposal pipeline has been used on a yearly basis to mitigate the odors of hydrogen sulfide that can occur when seaweed gets entrained into the sand in the harbor entrance during storm activity. However, complaints regarding hydrogen sulfide odors and effects continued to be received from neighbors and local users of Harbor Beach/Twin Lakes State Beach during instances when entrance channel sediments were deposited into the surf line. Two years ago, in response to these complaints, the Monterey Bay Unified Air Pollution Control District (Air District) developed a protocol for limiting the emissions of hydrogen sulfide from the Harbor's dredging operation.

During the 2003-04 dredging season, the Port District used the offshore pipeline to dispose approximately 90% of the entrance channel sediments approximately 70 yards offshore; thus, during the 2003-04 dredging season, the surf line pipeline was used only approximately 10% of the time. The result of this was dramatically reduced hydrogen sulfide emissions. The 2004-05 dredging season, however, was a markedly different experience. According to the Port District, there were unusual currents and wave conditions that forced the Port District to use the offshore pipeline only approximately 58% of the time; 42% of the time the dredge material was placed into the surf line. Numerous complaints regarding hydrogen sulfide were received by the Port District, Commission staff, and the Air District during the 2004-05 dredging season.

Due to the unacceptable results of the 2004-05 dredging season regarding hydrogen sulfide emissions, the Air District found that the protocol needed to be amended to protect against the unpredictable conditions encountered last season. The amended protocol requirements of the Air District will greatly reduce the impacts to air quality from hydrogen sulfide released by dredge material. Special Condition #3 requires the Port District to provide evidence of the Air District's revised operating permit, as well as submission of the finalized copy of the Air District's revised hydrogen sulfide protocol prior to commencement of entrance channel sediment disposal operations. With this condition, the proposed project is consistent with Coastal Act Section 30253(3), which requires that the proposed dredging project be consistent with the requirements of the Air District and State Air Resources Board.

Water Quality: The proposed dredging and disposal project is expected to have short-term adverse impacts on water quality, including a temporary increase in turbidity and a decrease in dissolved oxygen levels. Thus the impact to these water quality variables is expected to be adverse but short-term and minor in magnitude and scope. Pre-dredge water conditions should recur shortly after each dredging and disposal episode. The project is conditioned to require specific dredge plans for each dredging episode to be undertaken during the term of this permit. In addition, the project is conditioned to require ACOE, EPA, Central Coast Regional Water Quality Control Board (RWQCB), and Monterey Bay National Marine Sanctuary (Sanctuary) review of all required

physical, chemical, and biological test results of the dredge material and approval by these agencies that the material is suitable for unconfined aquatic disposal. For dredge material proposed for upland disposal or requiring dewatering, this approval is conditioned to require authorization from the RWQCB. As conditioned, the proposed project is consistent with Coastal Act Sections 30231 and 30232 regarding the maintenance of marine water quality.

Biological Resources
Impacts to biological resources are anticipated to be temporary and similar to those associated with previously permitted annual or demonstration dredging episodes. This approval is conditioned to require timing limitations on dredge activities in the inner harbor to avoid impacts to steelhead, consistent with the requirements of the National Marine Fisheries Service. Also, the activities permitted under the proposed permit should not create any disturbance that would have an adverse effect on the California brown pelican. Furthermore, the tidewater goby appears to no longer inhabit the Arana Gulch area. Thus, the proposed project is consistent with Sections 30230 and 30231 of the Coastal Act regarding protection of species of special importance and maintenance of the biological productivity of coastal waters.

Public Access/Recreation: The proposed dredging project will strongly benefit public access and recreation by maintaining adequate water depths in the Harbor's navigation channels. Although the transport of dredge materials through the surf line pipeline or the offshore pipeline may potentially impact public access to Harbor Beach/Twin Lakes State Beach due to the presence of dredge materials in the water adjacent to these beaches, the dredge program is essential to allow for the Coastal Act priorities of commercial and recreational boating access. In addition, the impacts to water quality that affect public access and recreation will be temporary given that the dredge material will quickly disperse into ocean waters during the winter months when dredging and disposal are taking place and high wave conditions are present. Air Quality impacts to public access will be addressed by the amended protocol required by the Air District. Furthermore, the permit is conditioned to minimize impacts to public access due to the existence of the dredging pipelines by requiring that pipelines on the beach be buried at all times and requiring removal of the temporary offshore pipeline within two weeks of the end of the dredging season. Also, for any material proposed for disposal at an upland site or at SF-14, which may require dewatering on Harbor property, this approval is conditioned to require submission of a management plan to ensure that access to the Harbor is not adversely impacted by this activity. As conditioned, the project is consistent with the public access and recreational policies of the Coastal Act.

Staff Note: Pursuant to Coastal Act Section 30610(c), this permit does not apply to entrance channel dredging undertaken by the Santa Cruz Port District. Coastal Act Section 30610(c), states that no coastal permit is required for "maintenance dredging of existing navigation channels or moving dredged material from those channels to a disposal area outside the coastal zone, pursuant to a permit from the United States Army Corps of Engineers." However, pursuant to Coastal Act Section 30106, a coastal permit is required for disposal of dredge material from the harbor entrance channel into areas within the coastal zone. The Port District has requested to dispose of entrance channel dredge material into the surf line at Harbor Beach/Twin Lakes State Beach or through the offshore pipeline into the nearshore environment. These areas are located within the coastal zone. Therefore,

regarding the entrance channel dredging, this coastal permit applies only to the disposal of entrance channel materials, and no coastal permit is required for dredging of materials from the entrance channel area.

Staff Report Contents

Exhibits

I. STAFF RECOMMENDATION

The staff recommends that the Commission, after public hearing, **approve** the proposed permit subject to the standard and special conditions below. Staff recommends a **YES** vote on the following motion:

Motion. *I move that the Commission approve Coastal Development Permit Number 3-05-065*

pursuant to the staff recommendation.

Staff Recommendation of Approval. *Staff recommends a **YES** vote. Passage of this motion will result in approval of the coastal development permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*

Resolution to Approve a Coastal Development Permit. *The Commission hereby approves Coastal Development Permit Number 3-05-065 on the grounds that the development, as conditioned, is in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either: (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment; or (2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse effects of the development on the environment.*

II. CONDITIONS OF APPROVAL

A. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

B. Special Conditions

1. **Scope of Permit.** This five-year permit (commencing with the date of permit issuance) authorizes the dredging and disposal of Harbor sediments as follows:

    a. Annual disposal of a maximum of 350,000 cubic yards of entrance channel sediment, consisting of greater than 80% sand, through the offshore pipeline into the nearshore

environment or through the surf line pipeline onto Harbor Beach/Twin Lakes State Beach. All disposal of entrance channel sediments into the surf line shall be consistent with the requirements of the Monterey Bay Unified Air Pollution Control District, as noted in Special Condition #3 below and as described in Exhibit #5.

b. Annual dredging of a maximum of 10,000 cubic yards of sediment from the inner harbor with disposal through the offshore pipeline into the nearshore environment (no inner harbor dredge sediment may be disposed of into the surf line). Of this 10,000 cubic yards, 7,000 cubic yards shall consist of at least 80% sand and a maximum of 3,000 cubic yards may consist of between 50% and 79% sand. This portion of the permit may be carried out during the 2005-06 dredging season only if the dredging and disposal project approved by the Commission under CDP 3-05-026 is **not** carried out in October 2005.

c. Annual dredging of a maximum of 10,000 cubic yards of inner harbor sediment, which could consist of sediment averaging less than 50% sand, with disposal at an upland site or at SF-14.

2. **Timing of Dredging and Disposal.** All dredging and disposal activities will be conducted during daylight hours. The following date limitations on dredging and disposal operations apply:

a. Entrance channel dredging and disposal: November 1st to April 30th of each dredge season.

b. Upper (north) harbor dredging and disposal: November 1st to February 28th of each dredge season.

c. Lower (south) harbor dredging and disposal: November 1st to April 30th of each dredge season.

d. Installation of offshore pipeline no earlier than October 15th, with removal by May 15th of the following year. For the year 2005 only, if CDP 3-05-026 is implemented in October 2005, the offshore pipeline may be installed no earlier than September 15, 2005.

3. **PRIOR TO COMMENCEMENT OF ENTRANCE CHANNEL DISPOSAL OPERATIONS,** the Permittee shall submit to the Executive Director for review a copy of the revised operating permit from the Monterey Bay Unified Air Pollution Control District, as well as the finalized copy of the Air District's revised hydrogen sulfide protocol.

4. **PRIOR TO COMMENCEMENT OF INDIVIDUAL DREDGING EPISODES,** the Santa Cruz Port District shall submit to the Executive Director for review and approval:

a. A Sampling Analysis Plan (SAP) describing sediment sampling locations and applicable testing protocols. The SAP must be approved by the Executive Director prior to

sediment sampling.

b. Dredge material analysis (chemical, physical, biological) as required by ACOE, EPA, and RWQCB, as well as sampling and testing information.

c. A Dredging Operation Plan that includes plans showing the specific area(s) and volume(s) to be dredged.

5. **Testing Requirements.** All dredge materials shall be tested according to the requirements of the ACOE and EPA using the most current ACOE and EPA testing methods and/or procedures. All dredge materials proposed for unconfined aquatic disposal shall meet the RWQCB and EPA Clean Water Act disposal standards. Dredge material requiring dewatering and/or disposal at an upland disposal site shall be tested and managed according to the methods and/or procedures of the RWQCB.

6. **Other Agency Requirements. PRIOR TO COMMENCEMENT OF DREDGING AND DISPOSAL OPERATIONS**, the permittee shall submit to the Executive Director for review a copy of a valid permit, letter of permission, or evidence that no permit is necessary from the following agencies: Army Corps of Engineers, U.S. Environmental Protection Agency, Monterey Bay National Marine Sanctuary, Central Coast Regional Water Quality Control Board.

7. **Disposal Pipelines.** When not in use during the dredging season, the flexible above-ground surf line pipeline shall be pulled away from the surf line and placed at the base of the small bluff fronting East Cliff Drive. Regarding the permanent portion of the offshore pipeline, this pipeline shall be buried to a depth of at least 2 to 3 feet until approximately the mean high water line during the dredging season. This pipeline shall be buried completely to a depth of at least 2 to 3 feet during the non-dredging season. This permit does not authorize any riprap or other protective devices or measures to protect the permanent or temporary portions of any disposal pipeline.

8. **Public Access. PRIOR TO COMMENCEMENT OF ANY DREDGING OPERATIONS THAT WOULD REQUIRE DEWATERING OF SEDIMENT,** the Permittee shall submit to the Executive Director for review and approval a dewatering plan. This plan shall include the time period during which the dewatering process is expected to take place, and shall describe the area of the Harbor proposed to be used to dewater sediment. The plan will include protections for public access and parking in the Harbor during the dewatering procedure.

III. RECOMMENDED FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

A. Project Location & Background

The Santa Cruz Small Craft Harbor (Harbor) is located in the City of Santa Cruz, at the northern tip

of Monterey Bay, between Harbor Beach and Twin Lakes and Seabright State Beaches, and approximately 3,000 feet east of the San Lorenzo River mouth (Exhibit #1). The Harbor is a commercial fishing/small craft harbor with berthing facilities for approximately 920 boats. The proposed dredging sites include: 1) the harbor's entrance channel, which extends from the jetties to the fuel dock; 2) the inner harbor, which consists of all portions of the harbor located north of the fuel dock. The inner harbor consists of two subareas: 1) the upper (or north) harbor, which includes all harbor facilities located north of the Murray Street Bridge, and the lower (or south) harbor, which includes harbor facilities located between the fuel dock and the Murray Street Bridge (see Exhibit #2 for location maps).

The Santa Cruz Small Craft Harbor fronts the Monterey Bay National Marine Sanctuary (Sanctuary) which extends south from a point in Marin County to Cambria Rock in San Luis Obispo County, and extends from high tide seaward typically about 35 miles offshore. The Sanctuary is the nation's eleventh largest marine sanctuary, protecting marine resources that include the nation's most expansive kelp forests, one North America's largest underwater canyons, and the closest deep ocean environment to the continental United States.

The Harbor was initially constructed from April 1962 through January 1964, and was subsequently expanded into the upper portion of the former Woods Lagoon in 1972. Permanent jetties placed along the east and west sides of the Harbor's entrance channel provide year-round access to the Pacific Ocean. However, winter storms occasionally render the harbor entrance impassable because of the Harbor's entrance configuration. In total, the area of the Harbor encompasses approximately 38 acres of land and 52 acres of water. Within these areas one can find a variety of public amenities including approximately 920 berths and dory ties for commercial and recreational boats, 3.3. acres of sandy beach area on both sides of the jetties fronting the harbor mouth, and over 1,000 parking spaces that support marine related uses.

Overall, the Harbor facilitates ocean-related functions such as boat-launching, berthing for commercial vessels and recreational boats, boat repair areas, marine-related retail/commercial businesses, restaurants, sailing programs, a yacht club and boat sales. The vast majority of boat use at the Harbor is for recreational purposes, as opposed to commercial fishing.

The entrance channel receives sediment primarily from littoral drift at the harbor mouth. Shoaling of the harbor mouth entrance can occur due to unavoidable natural littoral drift processes, which can only be corrected by regular maintenance dredging.

B. Arana Gulch Watershed

The upper (north) portion of the inner harbor is situated at the lower reaches of the Arana Gulch watershed. Arana Creek flows through a culvert at the northern end of the Harbor and is discharged into the upper harbor waters. Sediments originating from the Arana Gulch watershed have proved to be the most problematic for the Harbor in recent times. On average, the Harbor receives approximately 1,000 to 15,000 cubic yards of sediment per year from the Arana Gulch watershed. Much of this sediment collects in the upper harbor and at times, has rendered this area impassable to boats (see Exhibit #3). The upper (north) harbor receives sediment primarily from the Arana Gulch

watershed, while the lower (south) harbor receives a combination of sediment from the entrance channel and the Arana Gulch watershed.

The Arana Gulch watershed drains a 3.5 square mile area between the City and County of Santa Cruz. Arana Gulch has historically sustained steelhead spawning and rearing. Currently, available salmonid habitat in the watershed is poor in quality due to a number of limiting factors, including sedimentation. The Santa Cruz County Resource Conservation District (SCRCD) prepared an *Arana Gulch Watershed Enchancement Plan* (Plan) in 2002. The Plan includes an assessment of current sediment and salmonid fisheries conditions and recommends a series of restoration projects to repair individual sites or constraints in the Arana Gulch watershed. A total of 18 restoration projects are proposed, which are rated from high priority to low priority, and miscellaneous projects. The Plan's objectives are to improve, protect, and increase accessibility to and use of steelhead habitat throughout the Arana Gulch watershed and to reduce erosion and sedimentation throughout the watershed. Currently, the engineering designs for two of the high priority projects are 90% complete and the SCRCD is awaiting feedback from permitting agencies regarding the projects. The purpose of one of these high priority projects, i.e. the Blue Trail Gullies project, is to repair an eroded area and re-stabilize a hillside to reduce sediment input into the watershed, which will ultimately reduce the amount of sediment that makes its way into the inner harbor. In addition, the Steelhead Fish Barrier #6 project includes removal of a culvert to allow for fish passage to upstream reaches of the central branch of Arana Gulch. This project includes the stabilization of stream banks, which will reduce the amount of erosion into the inner harbor. The Blue Trail Gullies project will likely be implemented in 2006, and the Steelhead Fish Barrier project will likely be implemented in late 2005 or 2006 (pers. comm. Bobbie Haver, Arana Gulch Watershed Alliance). An additional high priority project in the Plan involves reduction of concentrated runoff and downstream erosion and gullying at the City's disc golf course. The California Coastal Conservancy will fund the engineering design and permitting process for this project.

In addition to the above projects, which are part of the *Arana Gulch Watershed Enhancment Plan*, the California Department of Fish & Game has granted a 5-year permit to the Santa Cruz Port District for regular clearance of a sediment basin at Harbor High School. This basin is scheduled to be cleared for the fourth time this year, prior to the start of the rainy season. Regular clearance of this sediment basin reduces sediment inputs into the inner harbor.

C. Sediment Transport in Northern Monterey Bay

The Santa Cruz Small Craft Harbor lies within the Santa Cruz Littoral Cell, which extends from the Golden Gate Bridge in San Francisco, south to the Monterey Bay submarine canyon. The majority of sediment enters the littoral cell during winter rainstorms from November to March. The San Lorenzo River is a major contributor of sediment to northern Monterey Bay. The River, which is located approximately half a mile west of the Santa Cruz Harbor, discharges an average of 278,000 CY of sediment per year to the Santa Cruz Bight. Exhibit #4 shows the sediment plume that enters the ocean from the San Lorenzo River during periods of high rainfall. Approximately 73% (203,000

CY) of the River's annual discharge is estimated to be silt and clay sediment.

Sediments entering the ocean are sorted by the forces of waves and currents based on differences in grain-size, density, and shape. Sediment in the Santa Cruz Littoral Cell is sorted into two basic categories at a cut-off grain diameter of 180 microns. Sediments larger than 180 microns consist of fine-sand and larger-grained sand; sediments smaller than 180 microns are categorized as fine sediment (silt and clay). The larger, sandy sediments travel in the littoral drift or are deposited on beaches in the Santa Cruz area. Fine clay and silt sediments are transported offshore to the continental shelf, where they are deposited in abundance along a midshelf mudbelt. The mudbelt extends from south of Santa Cruz to north of Half Moon Bay and is up to 30 meters thick on the continental shelf offshore of the San Lorenzo River.[1]

D. Permit History

The U.S. Army Corps of Engineers (ACOE), in accordance with its mandate for maintaining navigable harbors and inland waterways, as defined in Section 10 of the Rivers and Harbors Act, has authority over and responsibility for maintaining the federal channel at the Santa Cruz Harbor. Beginning in 1965, the ACOE was the first agency to conduct dredge operations at Santa Cruz Harbor. However, the ACOE handed over its responsibilities to maintain the federal channel to the Port District in 1988. Thus, the Port District is now responsible for dredging both entrance channel and inner harbor areas until the year 2013, under an agreement between the Port District and ACOE.

Dredge operations at the Harbor have previously been authorized by a series of Coastal Permits and Consistency Determinations. Some of these include 3-81-140 for dredging between 1981 and 1983, 3-84-13 for dredging between 1984 and 1986, and CD-12-81, CD-46-83, CD-59-84, and CD-31-85 for individual dredging episodes corresponding to the year of issuance. In order to better facilitate individual dredging episodes, the Commission authorized Coastal Development Permit (CDP) 3-86-175 for the installation of a permanent onshore dredge disposal pipeline in 1986. The onshore disposal pipeline connects to the floating dredge barge and is located just under the sandy surface of Santa Cruz Port District Beach between 5th and 6th Avenues. From here, the Port temporarily connects additional piping to route dredge materials to the surf line. In addition, Coastal Permit 3-86-175 required the Port to submit, for review and approval by the Executive Director, a dredge operation and maintenance manual. The Port fulfilled this condition and has subsequently submitted modifications which have been approved by the Executive Director. The Commission authorized a five-year maintenance dredge operation under CDP 3-95-067.

In October 2000, the Commission granted a five-year permit (CDP 3-00-034) to the Santa Cruz Port District, which authorized the dredging of 10,000 CY of sediment per year from the inner harbor and 350,000 CY of sediment per year from the Harbor's entrance channel (see Exhibit #2 for location map). CDP 3-00-034 authorized disposal of these sediments into the surfline at Harbor Beach/Twin Lakes State Beach, or through the offshore pipeline (approximately 70 yards offshore) when hydrogen sulfide from decaying seaweed was present in entrance channel sediments in quantities

[1] Sea Engineering, Inc., 2005. *2005 Santa Cruz Harbor Dredge Disposal Monitoring Results.* Santa Cruz, CA. 16 pp. plus Appendix.

that would affect beachgoers or adjacent residents if the sediments were placed into the surfline. CDP 3-00-034 required that all dredged and disposed sediments consist of at least 80% sand, consistent with Army Corps of Engineers (ACOE) and U.S. Environmental Protection Agency (EPA) guidelines regarding dredging and beach replenishment.

In February 2001, the Commission approved an amendment (CDP 3-00-034-A1) to the Santa Cruz Port District's five-year dredging and disposal permit. CDP 3-00-034-A1 allowed for the one-time dredging of 3,000 CY of sediment from the inner harbor, with disposal by means of the offshore pipeline during February and/or March 2001. This sediment averaged 42% sand and 58% silt/clay and, after chemical and biological testing, was determined by the ACOE and EPA to be suitable for unconfined aquatic disposal. The Port District had requested the amendment because it contended that the 80% sand determination was too restrictive and precluded the beneficial use of otherwise clean sediments, of which a high percentage constitute sandy material. The Santa Cruz Port District had proposed the amendment as a "demonstration" project to determine if clean, fine-grain harbor sediments could be disposed of into the nearshore area in a manner beneficial to downcoast beaches and without harm to coastal resources.

According to letters from the EPA dated April 26, 2000 and December 15, 2000, the 80% sand standard is a "rule of thumb" guideline to be applied in situations where more detailed information is lacking. However, "it is not the only appropriate ratio." Regarding the 2001 demonstration project, the April 26, 2000 EPA letter states that the "EPA is pleased that the Harbor's evaluation efforts will provide information that could be used as a basis for documenting that a higher percent of fine grain materials may be discharged for beach nourishment in a manner consistent with the Guidelines." The December 15, 2000 EPA letter states that there is flexibility within the Clean Water Act Guidelines that allows for discharge of finer material for beach nourishment purposes, provided that site-specific information is available to determine any beach nourishment benefits or significant adverse impacts. The EPA felt that the proposed demonstration project could provide the kind of site-specific information necessary for further evaluation. Therefore, the EPA did not object to the proposed demonstration project, provided that the provisions of the monitoring program were enforced and that the results of the monitoring program were made available to the ACOE, the EPA, and other relevant agencies.

The 2001 demonstration project included a monitoring component to determine the effects, if any, of the disposal of fine-grain dredge material into the nearshore environment. At the February 2001 Commission hearing, California Department of Fish & Game personnel strongly suggested that a neutral, nontoxic fluorescent dye be added to the dredge material, prior to disposal, for monitoring purposes. The Commission added this requirement to its approval of CDP 3-00-034-A1. The 3,000 CY of sediment was dredged and disposed of into the nearshore environment in the early evening hours over a three-day period in late March 2001.

The 2001 monitoring program was designed and implemented by scientists from Moss Landing Marine Laboratories to determine if sedimentary changes occurred on the beaches and nearshore benthic habitats in the vicinity of the Santa Cruz Harbor due to the retention of fine-grain dredged sediment. In addition to a comprehensive scientific literature review, a variety of data were

collected from February 18, 2001 to April 14, 2001 to monitor the experimental dredging event and the natural processes occurring in the study area. Stream flow data were used to calculate sediment discharge estimates. Oceanographic swell information was downloaded to monitor wave conditions and to calculate littoral drift estimates. Over 300 sediment samples were collected and grain size analyses performed. Over 300 water samples were collected to observe changes in turbidity over time. Two separate geophysical surveys were executed to describe and quantify benthic habitats and sedimentary changes that may have occurred during the monitoring period. The scientists concluded, after complete integration and analyses of all the data types collected during the monitoring period, that the fine-grain material released into the nearshore environment did not significantly change, alter, or impact the beaches or nearshore marine benthic habitats in the study area.

The results of the dye tracking study in 2001 showed that dye was detected at most nearshore and beach stations at most time intervals. The overall dilution factor of the dye was very high at all stations, indicating that the high wave energy at the dredge material discharge point resulted in a rapid dilution of the discharge plume. This study also noted that dye is a tracer for the movement of water *and not sediment*, and cautioned that the results of the dye study should not be used to determine the movement and persistence of fine-grain dredge particles. In addition, Professor Gary Greene from Moss Landing Marine Laboratories found that the use of fluorescent dye as a tool to determine if fine-grain sediment settles in the nearshore sandy areas is fundamentally flawed, and that the only way to determine if this occurs is to sample bottom sediments. In addition, the Commission's staff biologist agreed with these criticisms regarding use of dye as a sediment tracer and also stated that sediment sampling is the only analysis that will determine if fine-grain dredge sediments adversely impact the beaches or the nearshore subtidal benthic environment.

In August 2003 the Commission approved a second amendment (CDP 3-00-034-A2) to the base dredging permit. CDP 3-00-034-A2 allowed for the yearly nearshore disposal of up to 3,000 CY of inner harbor sediment, consisting of between 50% and 80% sand, for the remaining two years of CDP 3-00-034. Requirements for lab testing of the fine-grain dredge material, according to all criteria prescribed by ACOE and EPA regulations, remained in place. These criteria included testing for 1) metals; 2) pesticides and PCBs; 3) butylins; 4) organotins; 5) total and water soluble sulfides; 6) total solids/water content; 7) total volatile solids; 8) total organic carbon; and 9) grain size distribution. As with the original demonstration project, only "clean" dredge material, i.e., material deemed suitable for unconfined aquatic disposal by the ACOE and the EPA, could be disposed of into the nearshore environment. Unlike CDP 3-00-034-A1, the EPA determined that the dredge material must consist of at least 50% sand to achieve the basic project purpose of beach nourishment.

The Commission conditioned its approval of CDP 3-00-034-A2 to require the submission of a monitoring program to determine if sedimentary changes occurred along the beaches and nearshore benthic habitats in the vicinity of the Santa Cruz Harbor due to retention of fine-grain material. In 2004, all dredged and disposed inner harbor sediments consisted of at least 80% sand and thus were allowed under the base permit (CDP 3-00-034) and were not subject to monitoring requirements. In February and April 2005, 7,050 CY of material was dredged from the inner harbor and disposed of

into the nearshore environment. Of this amount, 4,300 CY consisted of an average of 85% sand and 15% silt/clay, disposal of which was allowed under the base permit. A total of 2,750 CY of this inner harbor material consisted of an average of 71% sand and 29% silt/clay and was subject to a monitoring program required under CDP 3-00-034-A2. Results of the monitoring program (which was undertaken from February 10th to April 22nd) demonstrated that the discharge of fine-grain material did not cause any detectable changes in mean grain-size or silt and clay percentages beyond the range of normal winter background conditions. For the reasons discussed above, the Commission did not require use of fluorescent dye as part of the monitoring program required for this amendment.

In September 2005, the Commission approved CDP 3-05-026, which allows for the dredging of approximately 10,000 CY of sediment from the inner harbor, consisting of 50.8% sand and 49.2% silt/clay, with disposal through the offshore pipeline into the nearshore environment during October 2005 only. This approval includes an extensive monitoring program to evaluate the impacts to the beach or local benthic environment due to fine-grain sediment disposal into the nearshore environment.

E. Project Description

The Santa Cruz Port District has requested approval of a five-year permit to: 1) annually dispose of up to 350,000 cubic yards of entrance channel sediment, consisting of greater than 80% sand, through the offshore pipeline into the nearshore environment or through the surfline pipeline onto Harbor Beach/Twin Lakes State Beach; 2) to annually dredge up to 10,000 cubic yards of sediment from the inner harbor with disposal through the offshore pipeline into the nearshore environment. Of this 10,000 cubic yards, up to 7,000 CY would consist of at least 80% sand and a maximum of 3,000 CY would consist of between 50% and 79% sand; 3) annually dredge a maximum of 10,000 cubic yards of inner harbor sediment, which could consist of sediment averaging less than 50% sand, with disposal at an upland site or at SF-14, which is a federally approved offshore disposal site located approximately one mile offshore of Moss Landing at the head of the Monterey Bay Canyon. Special Conditions #1 and #2 describe the scope and timing of the proposed dredging and disposal activities allowed pursuant to this permit.

(Note: If CDP 3-05-026 (discussed above) is carried out in October 2005, #2 in the project description above will not be undertaken until the 2006-07 dredging season and this aspect of the proposed permit would be limited to a total of four years. If CDP 3-05-026 is *not* carried out in October 2005, then #2 described above could commence during the 2005-06 dredging season and this aspect of the permit, as well as the entrance channel dredging and dredging of inner harbor sediments with disposal at an upland disposal site or at SF-14, will be valid for five years.)

Dredge materials to be deposited directly into the surf line would travel from the dredge barge through a Commission approved (3-86-175) permanent pipeline that terminates at the harbor's east jetty. From here, the Port District would connect a flexible high-density polyethylene (HDPE) 16-inch surf line disposal pipeline. The surf line disposal pipeline would then be moved to various portions of Harbor Beach/Twin Lakes State Beach by way of bulldozer in order to optimize beach replenishment.

The offshore disposal pipeline has been used yearly since 1997 to mitigate the odors of hydrogen sulfide that can occur when seaweed gets entrained into the sand in the harbor entrance during storm activity. The offshore disposal pipeline emanates from a Y-pipeline connection at the east jetty. From the east jetty pipe connection, the temporary offshore pipe parallels the jetty out into the ocean to a point approximately 70 yards from the beach. The temporary offshore pipeline does not protrude past the east jetty nor does it traverse through the entrance channel. (See Figure #1 on next page for location of temporary offshore and surfline disposal pipelines) The temporary offshore pipeline rests on the ocean floor and is secured by a 3,000 pound Danforth anchor. When the temporary offshore pipeline needs to be unburied at the end of the dredge season, it is filled with air and raised. The anchor has a pendant wire to a large float marker that acts as a pick-point for retrieval of the anchor. The offshore pipeline is a temporary feature and in general is placed at the beginning of the dredge season before November 1st, and remains in place until the end of the dredge season (April 30th), with removal of the pipeline required by May 15th of each year (see Special Condition #2d). (**Note:** In October 2005 only, consistent with CDP 3-05-026, which allows for the dredging and offshore disposal of up to 10,000 CY of inner harbor material, the offshore pipeline may be installed by September 15th). The Port District proposes to use the pipeline whenever hydrogen sulfide odor is present (see discussion of this issue in the "Air Quality" section below), when onshore winds exist, or when beach or weather conditions conflict with beach users. The Sanctuary and ACOE have both approved the offshore disposal pipeline.

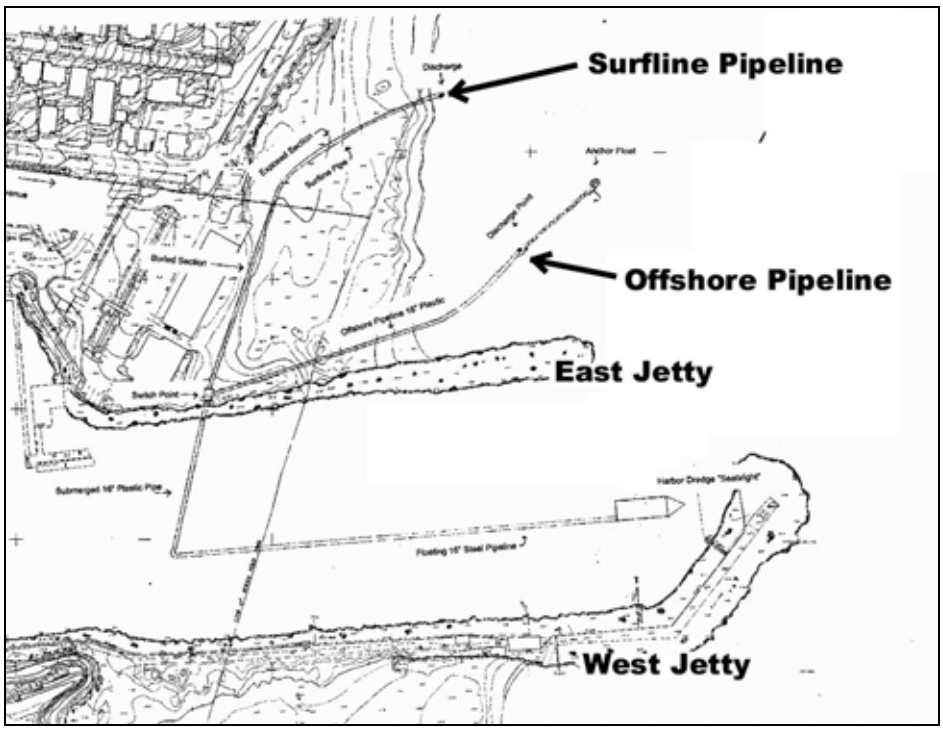

Figure 1. Pipeline Configuration.

IV. COASTAL ACT ISSUES

A. Land Use Priorities

Coastal-dependent and coastal-related development are among the highest priority Coastal Act uses.

The Coastal Act defines coastal-dependent and coastal-related as follows:

> ***Section 30101:*** *"Coastal-dependent development or use" means any development or use which requires a site on, or adjacent to, the sea to be able to function at all.*
>
> ***Section 30101.3:*** *"Coastal-related development" means any use that is dependent on a coastal-dependent development or use.*

Coastal Act Section 30001.5 states, in relevant part:

> ***30001.5:*** *The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:*
>
> *(a) Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources….*
>
> *(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.*
>
> *(d) Assure priority for coastal-dependent and coastal-related development over other development on the coast…*

Coastal Act Sections 30234, 30234.5 and 30255 also provide:

> ***30234:*** *Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.*
>
> ***30234.5:*** *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*
>
> ***30255:*** *Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.*

The Santa Cruz Small Craft Harbor is one of only six harbors located along the Central Coast, and is

the primary recreational port in Monterey Bay. The Santa Cruz Port District maintains approximately 920 berths and dory ties within the Harbor, which are used by a variety of recreational and commercial boats.

Proposed dredging areas in the Harbor include areas where deposition routinely reduces depths in and around navigational channels and berthing areas. During extreme depositional events, vessels must time their maneuvers in and out of the Harbor with the tides. Maneuvering within the Harbor has also at times proved difficult during low tides when many vessels rest on the muddy bottom sediments. Continued sediment inflows can be anticipated. This can, at times, result in severe impairment of Harbor capacity and risk to vessels if no action is taken. No feasible alternatives to the proposed dredging have been identified.

Section 30234 of the Coastal Act provides that facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Section 30234.5 states that the economic, commercial, and recreational importance of fishing activities shall be recognized and protected. Commercial and recreational boating and fishing are coastal-dependent priority uses that cannot function without sufficient Harbor depths. Hence, the maintenance of adequate berthing and navigational depths in the Harbor is essential, and must be considered a high priority under the Coastal Act. Likewise, the temporary installation of an offshore dredge disposal pipeline and the surf line pipeline serves to implement the maintenance of berthing and navigational depth, and, as such, are also considered high priorities under the Coastal Act.

The proposed dredging activities not only support coastal-dependent uses, but are integral to such uses and therefore have a priority under the Coastal Act. Accordingly, the Commission finds that the proposed project supports high priority coastal uses that are consistent with the land use priorities of the Coastal Act Section.

B. Air Quality

Section 30253(3) of the Coastal Act states:

> ***30253.*** *New development shall:*
>
> *(3) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.*

Hydrogen sulfide is a colorless, flammable gas, heavier than air, which at low concentrations smells like rotten eggs. Hydrogen sulfide is produced in nature primarily through the decomposition of dead plant and animal matter by anaerobic sulfur bacteria. Because it is heavier than air, hydrogen sulfide can accumulate in low-lying areas and in enclosed spaces. In entrance channel sediments, hydrogen sulfide is produced by decaying seaweed. The hydrogen sulfide from the decaying seaweed is released into the air when the sandy entrance channel material is placed into the surf line for beach replenishment. Some entrance channel sediments contain a low concentration of seaweeds and thus produce little or no hydrogen sulfide odor when placed into the surf line; other entrance channel sediments may contain a high concentration of seaweeds, resulting in higher amounts of hydrogen sulfide being released into the air when these sediments are deposited into the surf line.

The odor of hydrogen sulfide has been a major challenge for the Harbor as some surfers and harbor neighbors complain that the odor is overwhelming and in some cases makes people feel sick. Typical complaints include respiratory symptoms of nose and throat irritation, cough, and signs of inflammation. Nausea is also a typical complaint.

The California Air Resources Board sets legal limits on outdoor air pollution in order to protect the health and welfare of Californians. The California state ambient air quality standard for hydrogen sulfide is 30 parts per billion (ppb) averaged over an hour, i.e. the average of a number of readings taken over an hour-long period must not exceed 30 ppb. Although high levels of hydrogen sulfide can be irritating and cause a variety of health effects, irritation and respiratory effects are not expected to occur at levels below 30 ppb, the Minimum Risk Level established by the US Agency for Toxic Substances and Disease Registry.[2]

Commencing with the 1997 dredge season, the offshore disposal pipeline has been used on a yearly basis to mitigate the odors of hydrogen sulfide that can occur when seaweed gets entrained into the sand in the harbor entrance during storm activity. However, complaints regarding hydrogen sulfide odors and effects continued to be received from neighbors and local users of Harbor Beach/Twin Lakes State Beach during instances when entrance channel sediments were deposited into the surf line. Two years ago, in response to these complaints, the Monterey Bay Unified Air Pollution Control District (Air District) developed a protocol for limiting the emissions of hydrogen sulfide from the Harbor's dredging operation. The protocol's development included substantial public review and input, including two public meetings. In October 2003, the Air District issued the final hydrogen sulfide protocol, which was appended to the Harbor's dredge operating permits. The protocol included installation of a hydrogen sulfide monitor to operate when the wind direction was onshore, and a wind instrument to provide an indication of wind direction. During the 2003-04 dredging season, the Port District used the offshore pipeline to dispose approximately 90% of the entrance channel sediments approximately 70 yards offshore; thus, during the 2003-04 dredging season, the surf line pipeline was used only approximately 10% of the time. The result of this was dramatically reduced hydrogen sulfide emissions, no interference with the obligations of the Harbor in maintaining its entrance channel, and very few, if any, complaints from neighbors or surfers about hydrogen sulfide odors during the 2003-04 dredging season.

The 2004-05 dredging season, however, was a markedly different experience. According to the Port District, there were unusual currents and wave conditions that forced the Port District to use the offshore pipeline only approximately 58% of the time; 42% of the time the dredge material was placed into the surf line. The Harbor's dredge operation repeatedly encountered pockets of hydrogen sulfide-producing materials that resulted in odorous emissions at levels never before measured or believed possible. In some instances, single readings of hydrogen sulfide recorded by the air monitor exceeded 3,000 ppb (normal background hydrogen sulfide levels in the Harbor area when dredging is *not* taking place have been measured at 3-5 ppb). Numerous complaints regarding hydrogen sulfide were received by the Port District, Commission staff, and the Air District during the 2004-05 dredging season.

[2] Rhode Island Department of Health. http://www.health.ri.gov/environment/risk/hydrogensulfide.php

Due to the unacceptable results of the 2004-05 dredging season regarding hydrogen sulfide emissions, the Air District found that the protocol needed to be amended to protect against the unpredictable conditions encountered last season (see Exhibit #5 for proposed revisions). Specifically, the Air District is requiring the following to be implemented when onshore winds exist and disposal of entrance channel sediments is taking place in the surf line (see page #6 of Exhibit #5 for a summary of the proposed revisions to the Air District's hydrogen sulfide protocol):

- Reduction of the air sampling interval from two minutes to one minute;
- Cessation of dredging when the air monitor records 15 ppb of hydrogen sulfide for four successive readings, or any single reading of 60 ppb or more;
- No restart after cessation until the following day;
- Adding a new "not to exceed" limit of 30 ppb for a one-hour average (State Air Board's existing standard for hydrogen sulfide). Violation of this limit would be enforced through the imposition of civil penalties.

When offshore winds exist (typical in the a.m. hours), the Port District may deposit entrance channel dredge material into the surf zone to replenish Harbor Beach and Twin Lakes State Beach, without air monitoring being undertaken. Air monitoring is also not required when dredge material is disposed of through the offshore pipeline. For entrance channel dredge material, the Port District hopes to manage the offshore pipeline in such a way that 85% to 90% of the dredge material will be disposed of through the offshore pipeline, with only 10% to 15% of the entrance channel dredge materials being deposited into the surf line to replenish Harbor Beach/Twin Lakes State Beach. All inner harbor dredge material is required to be disposed of through the offshore pipeline.

The above requirements by the Air District will greatly reduce the impacts to air quality from hydrogen sulfide released by dredge material. Special Condition #3 requires the Port District to provide evidence of the Air District's revised operating permit, as well as submission of the finalized copy of the Air District's revised hydrogen sulfide protocol prior to commencement of entrance channel sediment disposal operations. With this condition, the proposed project is consistent with Coastal Act Section 30253(3), which requires that the proposed dredging project be consistent with the requirements of the Air District and State Air Resources Board.

C. Marine Resources & Environmentally Sensitive Habitats

1. Beach Replenishment

Coastal Act Section 30233 details the conditions under which dredging may be permitted and states:

> **§ 30233:** *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and*

shall be limited to the following: (l) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps. (3) In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland. (4) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities. (5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. (6) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. (7) Restoration purposes. (8) Nature study, aquaculture, or similar resource dependent activities.

(b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. ***Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems. [emphasis added.]***

(c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the l9 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

Section 30233 of the Coastal Act allows for the dredging of harbor waters in order to maintain depths necessary for navigation where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects. It also specifies that dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

The proposed project represents a comprehensive program for operations and maintenance activities necessary to maintain and improve navigation channels and berthing areas for recreational boating and commercial fishing. Offshore and surf line disposal sites have been established for beach replenishment. The offshore disposal site will allow sandy sediments to become available to nearby beaches within the Santa Cruz Littoral Cell. Disposal of sandy sediment directly into the surf line will provide direct sand replenishment to Harbor Beach and Twin Lakes State beach. The ACOE

and the Sanctuary have approved these dredge disposal sites.

In addition to entrance channel dredge material, which is composed of greater than 80% sand, the proposed project includes the dredging and disposal of up to 3,000 CY of clean, fine-grain (between 50% and 80% sand) material through the offshore pipeline into the nearshore environment. As discussed above in the "Sediment Transport…" section, sediments entering the ocean are sorted by the forces of waves and currents based on differences in grain-size, density, and shape. Sediment in the Santa Cruz Littoral Cell is sorted into two basic categories at a cut-off grain diameter of 180 microns. Sediments larger than 180 microns consist of fine-sand and larger-grained sand; sediments smaller than 180 microns are categorized as fine sediment (silt and clay). The larger, sandy sediments travel in the littoral drift or are deposited on beaches in the Santa Cruz area. Fine clay and silt sediments are transported offshore to the continental shelf, where they are deposited in abundance along a midshelf mudbelt. Thus, up to 1,500 CY of this material will be composed of sand that will become available for beach replenishment, while the remaining fine-grain material will be transported offshore to the midshelf mudbelt.

The proposed dredging and disposal operation is the only feasible alternative to maintain adequate depths within the Harbor. Additionally, the project will ensure that a large volume of sandy sediments will become available for beach replenishment, either from the Santa Cruz Littoral Cell for sediments disposed of through the offshore disposal pipeline or directly to Harbor Beach and Twin Lakes State Beach from sediments disposed of into the surf line. Thus, the Commission finds that the proposed dredging project is consistent with Section 30230 of the Coastal Act.

2. Water Quality

Coastal Act Sections 30231 and 30232 state:

> **§ 30231:** *The biological productivity and the quality of coastal waters, [..] appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment,…*
>
> **§ 30232:** *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

To date, prior to each dredge episode, the suitability of the proposed dredge material for disposal in any of the proposed aquatic locations has been evaluated by an interagency group consisting of representatives from the Army Corps of Engineers (ACOE), the U.S. Environmental Protection Agency (EPA), The Central Coast Regional Water Quality Control Board (RWQCB), the Commission, and the Monterey Bay National Marine Sanctuary (Sanctuary). Advisory to this interagency group are the U.S. Fish & Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish & Game. The group has considered chemical and biological testing results, as well as physical grain size analyses, submitted by the Port District. Since 1998,

the interagency group has considered test results according to the guidelines within the testing manual entitled "Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (the Inland Testing Manual or ITM, published in February, 1998 by the U.S. Environmental Protection Agency and the ACOE). After considering test results, the group then tries to reach a consensus opinion as to whether or not the proposed dredge material is suitable for aquatic disposal. This process would continue under this Coastal Development Permit, as required under Special Conditions #4 through #6.

For entrance channel sediments, which have consistently been composed of approximately 90% sand, the required testing would be done on a rotational basis, i.e., periodic physical (grain size) and chemical testing would alternate on an every-other-year basis, with occasional years of no testing if the previous two years of testing have shown adequate grain size and no chemical contamination (chemical testing is not as critical for sandy sediments because chemical contaminants are much more likely to adhere to fine-grain sediments than sandy sediments).

All inner harbor sediments proposed for unconfined aquatic disposal (either through the offshore pipeline or at the SF-14 federal offshore disposal site) would require yearly physical and chemical testing, as well as occasional biological testing. Inner harbor sediment that is determined to be less than 50% sand would not be eligible for unconfined aquatic disposal through the offshore pipeline or at SF-14; this material would require upland disposal. The EPA and ACOE would not require chemical and biological testing for fine-grain material proposed for disposal at an upland site. For material proposed for disposal at an upland site or at SF-14, the Port District proposes to dewater the material prior to transport. The RWQCB, however, would impose permitting requirements regarding the dewatering and would also require these sediments to be tested to ensure that they meet standards for solid waste disposal. Special Condition #5 requires evidence that these approvals from the RWQCB have been received prior to any dewatering activities or removal of dredge material to an upland disposal site.

Anticipated water quality impacts of dredging and disposal occur through variables such as dissolved oxygen (DO), pH, salinity, total suspended solids (TSS), and turbidity. Turbidity near the dredging and disposal sites would increase because of additional TSS in the water column. DO levels in the water column would decrease during disposal events due to increased turbidity. Long-term changes in turbidity and dissolved oxygen can have an adverse effect on kelp beds. Kelp beds are found offshore of the proposed disposal area. Although increased turbidity and decreased dissolved oxygen levels are expected to occur as a result of dredge disposal, the pre-dredge-operation ambient water quality condition should return shortly after each dredging episode. This is supported by the findings of the Moss Landing Marine Laboratories study on the impacts of the demonstration-dredging project in 2001 (CDP 3-00-034-A1), which included nearshore disposal of fine-grain sediments. A strong turbidity signature was not identified in the water samples taken during the demonstration dredging event, nor was any odor or discoloration observed. In fact, the level of turbidity was found to be higher in water samples collected the day before the demonstration-dredging event began, due to intense rainstorms and flooding at that time. The highest turbidity values were located near the areas where runoff continued to occur by the mouths of the San Lorenzo River and Schwann Lagoon.

In addition to the entrance channel disposal, the proposed permit would allow the dredging of up to 3,000 CY of inner harbor sediment consisting of between 50% and 79% sand, with disposal of this material through the offshore pipeline into the nearshore environment. As stated above, all inner harbor sediments proposed for unconfined aquatic disposal would require yearly physical and chemical testing, as well as occasional biological testing. The monitoring programs required for the two demonstration projects (CDPs 3-00-034-A1 and 3-00-034-A2), which also included nearshore disposal of up to 3,000 CY of fine-grain material, concluded that these projects resulted in no significant impacts to the marine environment. For these reasons, the Commission is not requiring additional monitoring programs for the proposed project as it relates to the disposal of up to 3,000 CY of fine-grain (composed of between 50% and 80% sand) material through the offshore pipeline.

In summary, the proposed dredging and disposal project is expected to have short-term adverse impacts on water quality, including a temporary increase in turbidity and a decrease in dissolved oxygen levels. Thus the impact to these water quality variables is expected to be adverse but short-term and minor in magnitude and scope. Pre-dredge water conditions should recur shortly after each dredging and disposal episode. In addition, the conditions of this permit require evidence of approval from the California Regional Water Quality Control Board prior to dredge operations authorized under this permit.

To ensure that the proposed method and content of dredge spoil disposal is consistent with Federal, State, and local regulations regarding the protection of water quality, Special Conditions #4 and #6 require that the submission of specific dredge plans, for each dredging episode to be undertaken during the term of this permit, be accomplished with written evidence that the ACOE, RWQCB, EPA, and the Sanctuary have reviewed and approved the dredging operations or that no such approval is required. In addition, Special Condition #5 requires that testing of dredge material be done per the requirements of the EPA, ACOE, and RWQCB. Therefore, as conditioned, the project will include measures and monitoring protocols to ensure protection of water quality and marine resources in the Santa Cruz Small Craft Harbor and thus the proposed project will be in conformance with Sections 30231 and 30232 of the Coastal Act.

3. Biological Resources

Sections 30230 and 30231 of the Coastal Act protect biological resources and state:

> ***30230:*** *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*
>
> ***30231:*** *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through,*

among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

The Santa Cruz Small Craft Harbor is connected to the Monterey Bay National Marine Sanctuary (Sanctuary). The Sanctuary encompasses over 5,300 square miles of protected marine waters and includes a diverse complex of marine habitats including deep sea, open ocean, kelp forests, sandy beaches, rocky seashore, estuaries and sloughs. These habitats support a variety of marine life including more than 345 species of fish, 94 species of seabirds, 26 species of marine mammals, 450 species of algae and one of the world's most diverse invertebrate populations.

Beginning in 1962, the Santa Cruz Small Craft Harbor was developed in a coastal estuary known formerly as Woods Lagoon that formed at the base of the Arana Gulch watershed. Water originating from the Arana Gulch watershed drains into the harbor through four 72-inch culverts that extend beneath the inner harbor parking area (see Exhibit 3, pg. 1). Except for the coastal salt marsh and brackish marsh habitat areas of Arana Gulch to the north, the harbor is now essentially a manmade environment that is devoid of the natural estuarine habitat that once prevailed. The harbor is surrounded entirely by urban development. Thus, for the most part, the tidal waters of the harbor are an enclave that is surrounded by urban harbor development consisting of floating docks, riprap, roads and parking lots, boats, and various buildings. Nonetheless, some marine mammals, fish and seabirds make use of the urban aquatic and terrestrial environments provided in the Harbor.

Generally, the greatest potential for adverse environmental effects from dredged material discharge lies in the benthic environment. In this case, the subject benthic environment includes ocean bottom flora and fauna of the inner harbor area and also the sandy subtidal and intertidal areas off Harbor Beach/Twin Lakes State Beach. Under the proposed project, dredge material would be disposed of into the surf line at Harbor Beach/Twin Lakes State Beach or through the offshore pipeline in the vicinity of the Harbor's east jetty. The substrate of the benthic environment in these locations consists of sandy beach and/or a sandy ocean bottom. These environments are dynamic and contain ever-changing habitats for a variety of benthic species.

More specifically, sandy beach areas included in the project area are very harsh environments, encompassing most of the rigors of the rocky intertidal (high wave action, wide temperature range, periodic tidal exposure) with the addition of high abrasion levels and lack of firm substrate for attachment. Beach fauna exhibit the characteristics of communities in harsh environments, namely low species diversity but large numbers of individuals of each species. Because meiofauna (organisms inhabiting the interstitial spaces between the sand grains) are a distinct fauna from the more obvious macrofauna, the distribution of meiofauna is strongly influenced by the grain size of the sand. If there is a significant silt component in the sediment, the interstitial spaces are filled by the silt particles, impacting the interstitial fauna. Under the proposed project, however, only entrance channel material that is greater than 80% sand would be eligible for disposal into the surf line. In addition, as discussed above, the Port District intends to use the offshore pipeline to dispose

85% to 90% of the entrance channel sediments to reduce impacts to air quality. No inner harbor sediments, which may contain a higher composition of fine-grain material, may be disposed of into the surf line. For these reasons, the impacts to meiofauna will be temporary and less than significant.

Impacts to biological resources are anticipated to be similar to those associated with previously permitted annual dredge episodes. The primary impact to biological resources resulting from dredging occurs through the disturbance, transport, and destruction of benthic organisms on and in the material to be dredged. However, re-colonization by these organisms would occur over time. While, dredge material disposal may induce turbidity and cause stress on planktonic larvae and filter feeder organisms (e.g., worms and shellfish), such stress would be temporary.

The removal of sediment from dredge areas could have short-term, adverse impacts on fish and fish habitats by temporarily increasing the total suspended sediments in the water column and possibly decreasing dissolved oxygen levels during dredge operations. However, as proposed, dredging will be conducted using a hydraulic dredge, which removes and transports dredged material as liquid slurry, thereby minimizing disturbance and re-suspension of sediments at the dredge site. This will minimize adverse environmental impacts to marine and wildlife habitats and water circulation during dredging, consistent with Coastal Act requirements.

Several endangered or threatened species are found in the harbor area or just offshore. According to previous correspondence received from the California Department of Fish and Game, the state and federally listed California brown pelican has been documented at the offshore disposal site. The underwater disposal of dredge material is not expected to create excessive vibration, noise, or surface turbulence that would affect birds in the area.

The tidewater goby (*Eucyclogobius newberryi*) is a federally listed endangered species and is state listed as a species of special concern. Tidewater gobies were known to occur in Woods Lagoon in 1984, but there have been no recent sightings. Past sampling and existing conditions in Arana Gulch indicate that the tidewater goby no longer inhabits Arana Gulch and that habitat for the species is lacking. The inner harbor salinity level is in excess of what could support the tidewater goby.

Steelhead trout (*Oncorhynchus mykiss*) is a federally and state listed threatened species. Arana Gulch has supported steelhead passage. The Port District has completed an informal consultation with the National Marine Fisheries Service (NMFS), which has imposed certain timing restrictions for dredging of the inner harbor areas to protect salmonids (see Exhibit #6). According to staff at NMFS, limiting all inner harbor dredging to the daytime hours will mitigate impacts to salmonids, which migrate at night (pers. comm. Jonathan Ambrose). Additional timing limitations required by NMFS include allowing dredging of the northern (upper) portion of the inner harbor only between November 1st and February 28th to protect smolts. Dredging of the southern (lower) portion of the inner harbor may take place between November 1st and April 30th, consistent with the proposed dates for entrance channel dredging and disposal. Special Condition #2 incorporates these date and time restrictions into this permit. NMFS staff believes that entrainment of steelhead is unlikely due to the presence of screens on the hydraulic dredge and the fact that the Port District does not commence dredging activities until the head of the hydraulic dredge has been placed down into the sediment.

In addition to the dredging and disposal of sandy entrance channel sediments, the proposed permit would allow the dredging of up to 3,000 CY of clean fine-grain sediment (between 50% and 80% sand) from the inner harbor, with disposal through the offshore pipeline into the nearshore environment. The amount of this material, which could consist of a maximum of 1,500 CY of fine-grain material, is miniscule when compared to the average 278,000 CY of sediment per year the San Lorenzo River releases into the ocean approximately half-a-mile from the harbor, of which approximately 203,000 CY (or 73%) is estimated to be silt and clay sediment. As discussed above in the "Permit History" section, the Commission has previously approved two "demonstration" projects (CDPs 3-00-034-A1 and 3-00-034-A2) that included the dredging and disposal of similar amounts of fine-grain inner harbor material into the nearshore environment. Both of these projects required extensive monitoring programs, the results of which demonstrated that the discharge of fine-grain material released into the nearshore environment did not significantly change, alter, or impact the beaches or nearshore marine benthic habitats in the study area.

Additionally, for the demonstration dredging project conducted in early 2005 (CDP 3-00-034-A2), the Central Coast Regional Water Quality Control (RWQCB) Board required that the Port District conduct a study on the sand crab, *Emerita analoga*, to determine if there were any cumulative effects to this species due to the dredging and disposal of fine-grain inner harbor sediments into the nearshore environment. *E. analoga* is a dominant member of the sandy beach invertebrate community along much of the California coastline. This species is a suspension feeder that uses its plumose second antennae to sieve particles from the water. Populations of *E. analoga* have been used as bio-indicators in a number of studies because this species is known to bio-accumulate metals and hydocarbons.[3] *Emerita analoga* were collected from four sites, including three sites along Twin Lakes State Beach and one from a reference sample several miles downcoast at Capitola Beach. Samples were collected both pre- and post-dredging and disposal. In addition, sample results were compared to the results from *E. analoga* tissue samples analyzed from Santa Cruz Main Beach and Scotts Creek Beach by the California Department of Fish & Game (CDFG) in 2000 and 2001. Whole tissue analyses were performed for trace metals and percent solids, as well as analyses for polychlorinated biphenyl congeners (PCBs), organochlorine pesticides, polycyclic aromatic hydrocarbons (PAHs), percent lipids, and percent solids. In summary, analytical results for metals, organochlorine pesticides, PCBs and PAHs were generally similar between pre- and post-dredge sand crab tissues samples, i.e., there were low concentrations of contaminants in the sand crabs collected before dredging and disposal took place, and there was no increase in these low concentrations of pollutants in sand crabs collected post dredging and disposal. Furthermore, these results were comparable to, or had less concentration of contaminants, than the results from tissue samples analyzed by CDFG in 2000 and 2001. The results satisfied staff at the RWQCB that the disposal of fine-grain material into the nearshore environment in 2005 did not result in any significant bio-accumulation of pollutants in *E. analoga.*

Given all the above, the Commission is not requiring that the Port District undertake a monitoring program for the fine-grain dredging and disposal component of the proposed project.

[3] Dugan, J.E., G. Ichikawa and M. Stephenson. 2004. *Monitoring of Coastal Contaminants Using Sand Crabs.* Prepared for Central Coast Regional Water Quality Control Board. 35 pp.

In summary, impacts to biological resources are anticipated to be temporary and similar to those associated with previously permitted annual or demonstration dredging episodes. Special Condition #2 places timing limitations on dredge activities in the inner harbor to avoid impacts to salmonids, consistent with the requirements of NMFS. Also, the activities permitted under the proposed permit should not create any disturbance that would have an adverse effect on the California brown pelican. Furthermore, the tidewater goby appears to no longer inhabit the Arana Gulch area. Thus, the proposed project is consistent with Sections 30230 and 30231 of the Coastal Act regarding protection of species of special importance and maintenance of the biological productivity of coastal waters.

4. Public Access/Recreation

Coastal Act Section 30604(c) requires that every coastal development permit issued for new development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road.

Coastal Act Sections 30210 through 30214, as well as Sections 30221 and 30224, specifically protect public access and recreation. In particular:

> ***30210:*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211:*** *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> ***30212 (a):*** *Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects….*
>
> ***30213:*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.*
>
> ***30214 (a):*** *The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case….*
>
> ***30221:*** *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

> ***30224:*** *Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, [..] providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.*

In addition, **Coastal Act Section 30240 (b)** requires that development not interfere with recreational areas:

> ***30240(b):*** *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The Santa Cruz Small Craft Harbor provides public access and recreational opportunities of regional and statewide significance. These include boat launching, berthing for commercial vessels and recreational boats, boat repair areas, marine-related retail/commercial businesses, sailing programs, yacht club and boat sales. The proposed dredging project will strongly benefit public access and recreation by maintaining adequate water depths in the harbor's navigation channels. In addition, the vast majority of the dredge material will be composed of sand, which will become available for beach replenishment.

Adverse impacts to public access are possible, but will be of limited duration. First, the flexible above-ground pipeline used to transport suitable dredge spoils to the surf line creates, from time to time as it is moved about, a modest impediment to pedestrian travel along or to Harbor Beach/Twin Lakes State Beach (State Parks, however, supports the proposed dredging project – see Exhibit #7). The pipeline is generally 16 inches in diameter and may need to be traversed by persons walking across the beach. The Port District intends to dispose entrance channel sediments into the surf line only 10% to 15% of the time; the remaining sediments will be disposed of through the offshore pipeline. In order to minimize the impacts of the pipe on public access, Special Condition #7 requires that, when not in use, the flexible surf line pipeline will be pulled away from the surf line and placed at the base of the small bluff fronting East Cliff Drive.

Dredge material that is being disposed of directly into the surf line can also create temporary impacts to beachgoers due to the presence of dredge material in nearby ocean waters. As discussed above, however, it is the Port District's intent to dispose of only approximately 10% to 15% of the entrance channel sediments through the surf line pipeline to reduce the impacts of hydrogen sulfide odors on beachgoers, surfers, and neighbors, and to ensure compliance with the Air District's protocol requirements. Use of the offshore pipeline for the vast majority of dredge disposal will reduce impacts to public recreation and access of Harbor Beach/Twin Lakes State Beach. Additionally, the impacts to water quality that affect public access and recreation will be temporary given that the dredge material will quickly disperse into ocean waters during the winter months when dredging and disposal are taking place and high wave conditions are present.

The offshore pipeline is buried under the sand of Harbor Beach until approximately the mean high water line, where it daylights and runs adjacent to the east jetty. This pipeline presents little impact

to beachgoers. Special Condition #7 ensures that the permanent portion of the offshore pipeline will continue to be buried until approximately the mean high water line during the dredge season, and that it be completely buried when not in regular active use, i.e. during the non-dredging season. Regarding the temporary portion of the offshore pipeline that extends into the water, Special Condition #2d requires removal of this portion of the pipeline by May 15th of each year.

Regarding dredge material proposed for disposal at an upland disposal site or at SF-14, the Port District proposes to dewater this material prior to transporting the material to one of these sites. The Port District typically uses areas in the upper harbor parking lot for the dewatering process, which could have negative impacts to coastal access in this portion of the Harbor. Special Condition #8 requires submission of a public access management plan that demonstrates how the Port District will minimize impacts to parking and public access in this area of the Harbor when dewatering is occurring.

In conclusion, the dredge program is necessary to protect Coastal Act priority coastal-dependent uses. Although the transport of dredge materials to the surf line or the offshore pipeline may potentially impact public access to Harbor Beach/Twin Lakes State Beach, the dredge program is essential to allow for commercial and recreational boating access. The permit is conditioned to minimize any possible continuous barrier effects due to these pipelines. The project is further conditioned to minimize public access impacts in the upper harbor due to dewatering of dredge sediment. As conditioned, the proposed project would preserve public access and recreational opportunities and, as such, is consistent with the above-cited public access and recreational policies of the Coastal Act.

V. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary for Resources as being the functional equivalent of environmental review under CEQA. Accordingly, the Commission finds that as conditioned the proposed project will not have significant adverse effects on the environment within the meaning of CEQA; that there are no feasible alternatives which would significantly reduce any potential adverse effects; and, accordingly, the proposal, as conditioned, is in conformance with CEQA requirements.